

STMD Laser Lifetest Program Space Gradiometer

Completed Technology Project (2015 - 2017)



Project Introduction

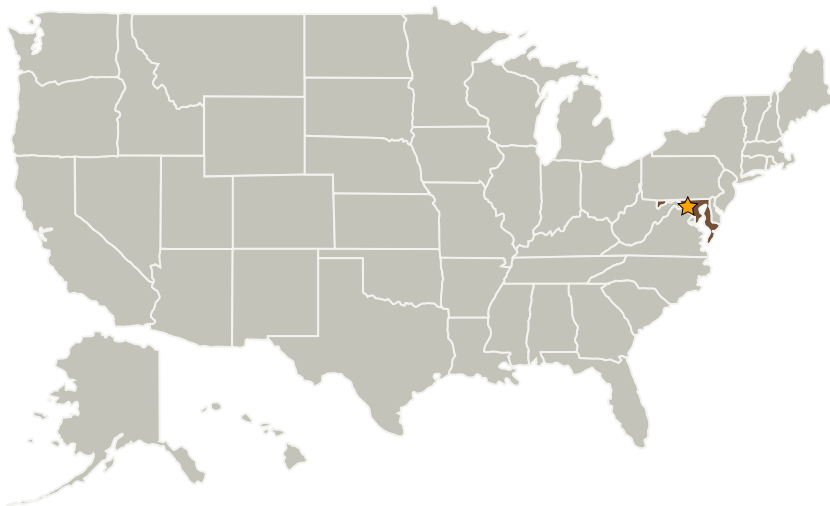
Design and initiate lifetest activities on laser transmitter for the Cold Atom Gravity Gradiometer (CAGG) with funding from NASA STMD.

This proposed task is to initiate a path toward space qualifying the laser transmitters for gravity gradiometer. For the Gravity Gradiometer effort, we have prepared a plan to bring the laser systems to TRL6 in a 36 month program. An early start in performing studies in the optical, optomechanical, thermal and electrical systems that are required to mount, operate and inject light into and beam shaping the output beam is paramount in making the TRL-6 plan successful. We will use this IRAD task to begin an extended duration testing of these tapered amplifiers and understand the performance and degradation mechanism.

Anticipated Benefits

Atom interferometer, lidar, altimetry

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Goddard Space Flight Center (GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland



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Primary U.S. Work Locations

Maryland

Project Transitions

October 2015: Project Start

September 2017: Closed out

Closeout Summary: The purpose of the Goddard Space Flight Center's Internal Research and Development (IRAD) program is to support new technology development and to address scientific challenges. Each year, Principal Investigators (PIs) submit IRAD proposals and compete for funding for their development projects. Goddard's IRAD program supports eight Lines of Business: Astrophysics; Communications and Navigation; Cross Cutting Technology and Capabilities; Earth Science; Heliophysics; Planetary Science; Science Small Satellites Technology; and Suborbital Platforms and Range Services. Task progress is evaluated twice a year at the Mid-term IRAD review and the end of the year. When the funding period has ended, the PIs compete again for IRAD funding or seek new sources of development and research funding or agree to external partnerships and collaborations. In some cases, when the development work has reached the appropriate Technology Readiness Level (TRL) level, the product is integrated into an actual NASA mission or used to support other government agencies. The technology may also be licensed out to the industry. The completion of a project does not necessarily indicate that the development work has stopped. The work could potentially continue in the future as a follow-on IRAD; or used in collaboration or partnership with Academia, Industry and other Government Agencies. If you are interested in partnering with NASA, see the TechPort Partnerships documentation available on the TechPort Help tab. <http://techport.nasa.gov/help>

Images



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(<https://techport.nasa.gov/image/19278>)

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

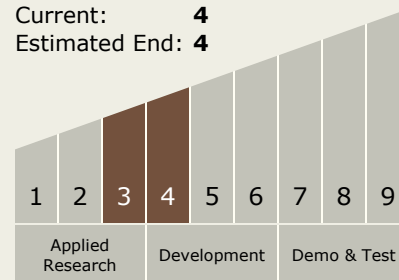
Peter M Hughes

Project Managers:

Myra J Bambacus
Terence A Doiron

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Project Website:

<http://aetd.gsfc.nasa.gov/>

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.5 Lasers

Target Destinations

Foundational Knowledge, Earth